

## **DETAILED ACTION**

### ***Response to Arguments***

The applicant's amendment dated October 15, 2008, will not be entered since the amendment raises new issues for search and consideration and also provides new matter not supported within the applicant's originally filed specification.

If the amendment were to be entered the claims would be rejected as follows:

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-2 and 8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1 and 8 contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The applicant's amendment states that the FWHM of a [20-24] plane is 286 seconds. There is no support for this FWHM. The applicant is supported for 278 seconds.

Claim 2 is rejected for being dependent upon a base rejected claim.

Arguments in Regards to the anticipation rejection over Melnik.

The applicant's amendment to the claims of using a base seed substrate to grow the self supported nitride semiconductor, wherein the base seed substrate is of a different material is a product by process limitation. The end result of the instant claims is still a self supported nitride substrate as taught by Melnik and Albrecht. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.”, (In re Thorpe, 227 USPQ 964,966). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product (In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113).

While applicants' state that a self-supported nitride semiconductor substrate grown on a base substrate made of a different material from that of the self-supported substrate would have different features than, for instance, the GaN substrate of Melnik

Art Unit: 1794

grown on a base substrate made of the same material from that of the self-supported substrate, applicant provides no evidence to support this position.

The applicant's arguments to Melnik, where Melnik teaches 300 arc seconds for the [0002] plane (col. 11 lines 30-35) is considered however it is the examiners position that Melnik teaches a wide range of between 60 and 360 seconds (col. 8, lines 10-16). The "applicant must look to the whole reference for what it teaches. Applicant cannot merely rely on the examples and argue that the reference did not teach others." In re Courtright, 377 F.2d 647, 153 USPQ 735,739 (CCPA 1967).

The applicants then argue that there is a tendency to have a corresponding larger value of FWHM in a (20-24) plane that that in a (0002) plane. In light of the applicants' Declaration dated September 20, 2006, the Examiner agrees that this statement may be true. However it is not commensurate with the scope of Melnik. Melnik teaches a wide range of desired FWHM's and the applicant has not persuasively argued the instance where Melnik teaches that the FWHM of the (0002) plane is 90 or 60 arc seconds.

The applicant acknowledges that Melnik teaches a FWHM of 60-360 arc seconds, on page 9 second paragraph. However the applicant then argues product by process limitations, which for reasons set forth above are not persuasive arguments.

#### Melnik as evidenced by Albrecht

In reviewing the prior art of record against the newly amended claims the

Examiner Notes:

Art Unit: 1794

- None of the prior art of record specifically teaches the FWHM of the [20-24] plane.
- Albrecht, in Table 1, teaches small nitride semiconductors with FWHM's in the [0002] and [11-24] planes of 91 arc seconds and 110 arc seconds respectively.
- Melnik teaches large nitride semiconductor substrates with a FWHM in the [0002] plane of less than 90 arc seconds (col. 8, lines 10-16).
- It is the Examiners position that since Melnik and Albrecht teach similar materials and similar processes and similar FWHMS of the [0002] planes, that the FWHM of 110 seconds for the [11-24] plane as evidenced by Albrecht is present in Melnik.
- For nitride semiconductor substrates there is a direct correlation of FWHM's of the [11-24] and [20-24] planes as is evidenced by Table 2 of page 18 of the instant specification. For all examples shown the FWHM's share a close relationship.

Therefore it is the Examiner's position in light of the information presented above that the crystal of Melnik will expectedly have a FWHM of 110 arc seconds for the [20-24] plane, which falls within the applicants instantly claimed range.

The applicant's arguments otherwise are not persuasive. The burden is on the applicant to show that the instantly claimed FWHM for the {20-24} plane is not present in Melnik. The applicant is invited to show evidence disproving the examiners position.

Art Unit: 1794

The applicant's argue that Albrecht shows that FWHM for (0002) and (11-24) are pronouncedly different. The Examiner agrees. However, the Examiner is not arguing this position. The Examiner argues that the FWHM of 90 arc seconds for the (0002) plane is also taught by Melnik (col. 11), and thus Melnik would also inherently possess the FWHM of 110 in the (11-24) plane as taught by Albrecht. The [11-24] plane corresponds to FWHM's of the (20-24) plane, per the applicants instantly taught Table 2. Albrecht is not relied upon for its teaching of size and is solely relied upon for its teaching of FWHM's for diffraction planes of nitride semiconductor substrates.

Albrecht in view of Melnik

The applicants argue that Albrecht teaches a small size in order to achieve low FWHM's, and that a larger diameter results in a FWHM of 300 arc seconds as taught by Melnik. The Examiner disagrees, for reasons set forth below.

The applicant's arguments to Melnik, where Melnik teaches 300 arc seconds for the [0002] plane (col. 11 lines 30-35) is considered however it is the examiners position that Melnik teaches a wide range of between 60 and 360 seconds (col. 8, lines 10-16). The "applicant must look to the whole reference for what it teaches. Applicant cannot merely rely on the examples and argue that the reference did not teach others." In re Courtright, 377 F.2d 647, 153 USPQ 735,739 (CCPA 1967).

Therefore Melnik teaches a FWHM of 90 arc seconds in the (0002) plane, which closely corresponds to the 91 arc second (0002) FWHM of Albrecht. Therefore the

Art Unit: 1794

applicant's position that as the diameter of a substrate increases the quality of the GaN crystals decreases is not commensurate with the scope of the prior art.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN C. LANGMAN whose telephone number is (571)272-4811. The examiner can normally be reached on Mon-Thurs 8:00 am - 6:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1794

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